



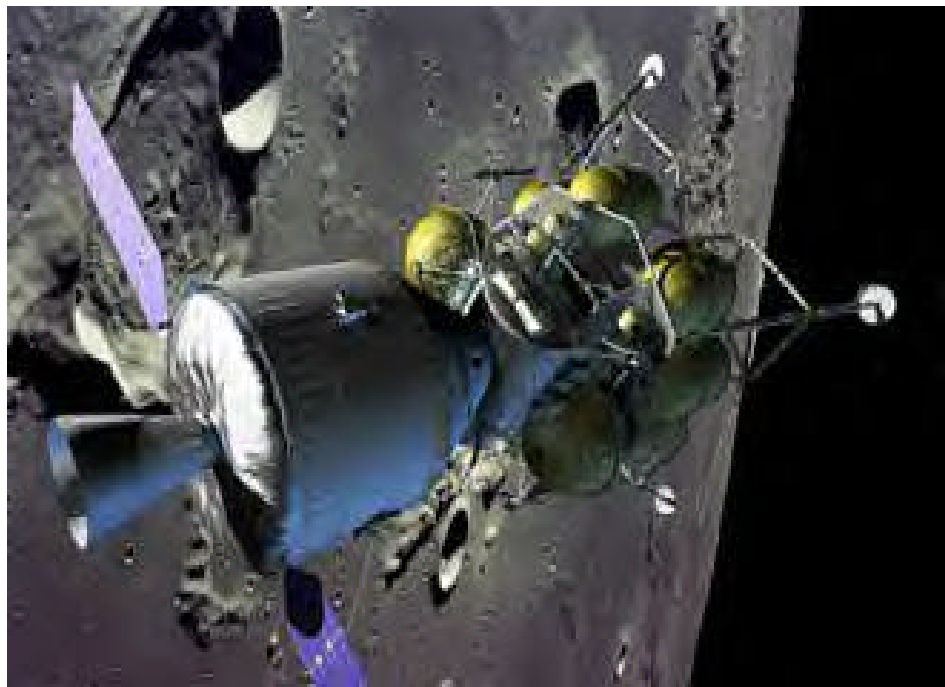
Group 224 Aerospace Update

Back to the Future

NASA's proposed new space vehicle is an updated version of the 1960's Apollo Command/Service and Lunar Modules!

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The proposed and yet to be named (currently being referred to as "Crew Exploration Vehicle") next generation spacecraft that is being designed to meet President Bush's challenge of returning to the moon, is actually very much an updated version of the Apollo/Saturn V vehicle that took Americans to the moon in the late 1960's and early 1970's.



Artist's conception of NASA's new four person "Mother ship" and landing vehicle in orbit around the moon. Plans call for the Orbiter to be fully automated so all four astronauts can go to the surface, unlike the Apollo Command Module, which required one astronaut to remain on board in orbit.

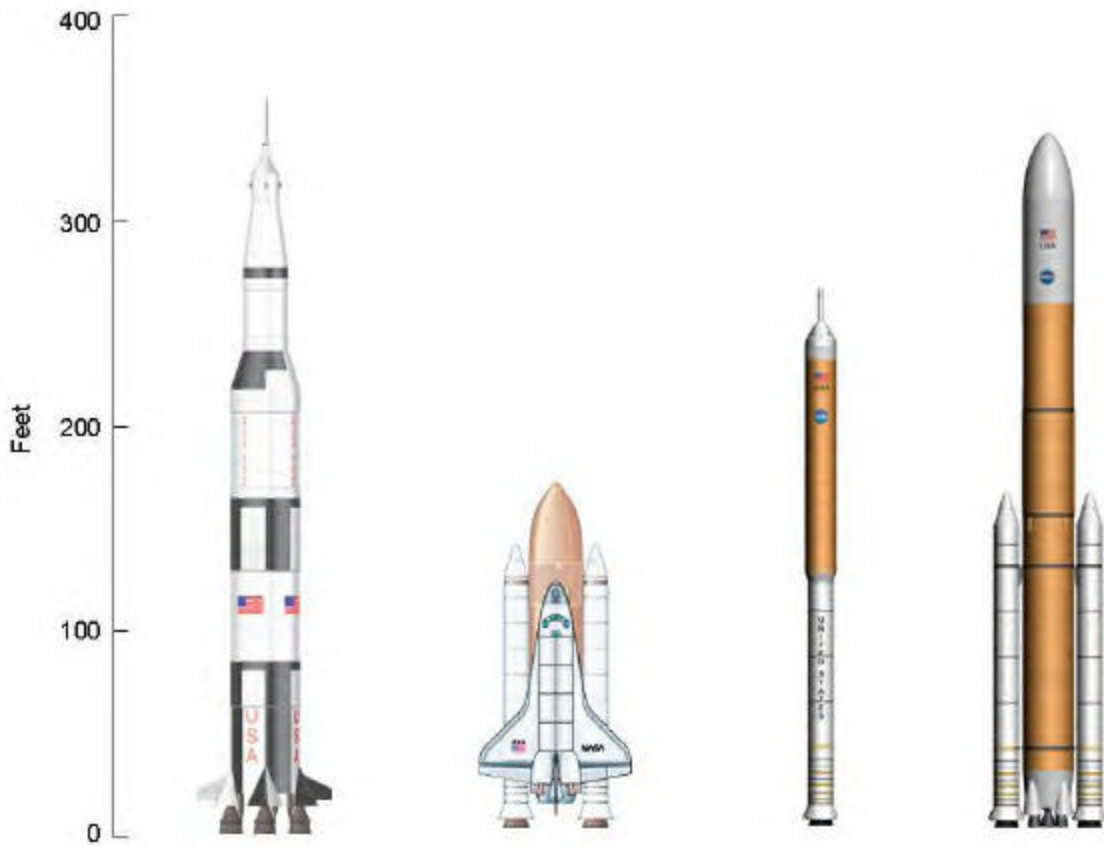
Some aspects of the new craft are:

- Three times larger than the old Apollo.
- Will carry a crew of four to the moon.
- An upgraded version will carry a crew of six to Mars.
- Will be capable of ferrying crew and supplies to the International Space Station.
- Will be powered by solar panels. The engines will use liquid methane. The reason for this is that future capability to retrieve methane, which is abundant in the atmosphere of Mars, could be used in a manned Mars landing.
- The spacecraft's crew module is expected to be capable of re-use up to ten missions. The heat shield will be easily replaced after each flight.
- Opposed to Apollo, the new landing vehicle will carry four astronauts to the lunar surface with stays of four to seven days. While Apollo was limited to landings in the equatorial regions, the lander will have ample fuel to land almost anywhere. The orbiting crew module can be left unmanned, eliminating the need for one astronaut to be left to tend it in lunar orbit.
- Launches of the crew module will use a single space shuttle solid rocket booster (SRB) with a second stage powered by a single space shuttle main engine. Astronauts will have an Apollo style launch escape tower, giving them the ability to safely abort a mission during the launch phase.
- An unmanned cargo booster will use two SRB's and five shuttle main engines to lift the lunar landing vehicle, supplies to the International Space Station (ISS), Moon base or Mars Mission components, or anything else up to approximately one hundred twenty five metric tons. This is about 1 ½ times the present capability of a Space Shuttle Orbiter.
- First flights to the ISS are projected to take place in about five years. Six trips per year could be average. Once a lunar base is established, lunar stays of up to six months can be expected. Robot ships will begin the preliminary work on a moon base with manned presence projected for 2018. Two missions per year will build towards a permanent lunar outpost. Accumulated experience will lead to six month crew rotations with unmanned landers bringing supplies.





Mission Profile



Size Comparison of Apollo, the Space Shuttle, and the new NASA manned and cargo vehicles.